Chapter22 Electric Charge

22-4 Coulomb's Law

22-04

Question 429
Suppose that isolated charges Q and q attract each other with a force F. If the separation between these charges were made half as great, each charge would then experience a force
(a) 2F/3.
(b) F.
(c) Can not be determined unless we know the magnitude of Q and q.
(d) 4 F.
(e) F/2.

22-04
0.57-52%

Question 430
Three charges are located as shown in Figure 1. If a = 3.0 m, Q1 = 2.0 micro-C, and Q2 = Q3 = 8.0 micro-C, what is the magnitude of the electric force on charge Q1?

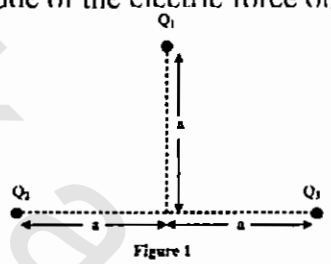

Figure 1

(a) 0.023 N
(b) 0.090 N
(c) 0.046 N
(d) 0.011 N
(e) 0.055 N

22-04
0.51-56%

Question 431
Three points charges are located on the x-y plane as follows: Q1 = -10 micro-C at (4 m, 0), Q2 = 20 micro-C at (0, 10 m), and Q3 at (4 m, 10 m). If the net force on Q1 points in the negative x-direction, find the charge Q3.
(a) -24 micro-C
(b) +16 micro-C
(c) 0 micro-C
(d) -16 micro-C
(e) +24 micro-C

22-04
0.34-40%

Question 432
A 0.2 g metallic ball hangs from an insulating string in a vertical electric field of 3000 N/C and directed upward as shown in Figure 1. If the tension in the string is 0.004 N, then the charge on the ball is:

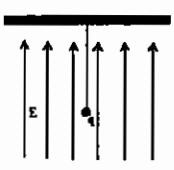

Figure 1

(a) -1.0 micro-C
(b) -0.7 micro-C
(c) 1.0 micro-C
(d) -2.0 micro-C
(e) 0.7 micro-C